

WHAT IS CLAIMED IS:

- 1           1.       A method, comprising:  
2           establishing a connection with a link partner at a common transmission speed;  
3           setting a duplex mode used for transmissions to a first duplex mode;  
4           monitoring a transmission error rate with the link partner;  
5           changing the duplex mode to a second duplex mode in response to detecting that  
6           the transmission error rate exceeds a threshold.
- 1           2.       The method of claim 1, wherein the duplex mode is changed without  
2           terminating the connection with the link partner.
- 1           3.       The method of claim 1, wherein the first duplex mode comprises full  
2           duplex and the second duplex mode comprises half duplex.
- 1           4.       The method of claim 1, wherein the first duplex mode comprises half  
2           duplex and the second duplex mode comprises full duplex.
- 1           5.       The method of claim 1, wherein the duplex mode is changed to the second  
2           duplex mode by:  
3           setting a flag in a hardware register to cause the hardware to transmit in the  
4           second duplex mode while maintaining the connection with the link partner.
- 1           6.       The method of claim 5, wherein the first duplex mode comprises full  
2           duplex and the second duplex mode comprises half duplex, and wherein the hardware  
3           switches to the half duplex mode in response to the flag being set by:  
4           detecting a receive signal while transmitting data;  
5           continuing to transmit the data in response to detecting the receive signal and the  
6           flag indicating the full duplex mode; and  
7           terminating the transmission of the data in response to detecting the receive signal  
8           and the flag indicating the half duplex mode.

1           7.     The method of claim 1, further comprising:  
2           using auto-negotiation when establishing the connection; and  
3           detecting a transmission speed of the link partner after determining that the link  
4 partner does not have auto-negotiation enabled, wherein the common connection speed  
5 comprises the detected transmission speed of the link partner.

1           8.     The method of claim 1, further comprising:  
2           forcing the transmission speed to a predetermined link speed, wherein the  
3 connection is established if the link partner transmits at the predetermined link speed.

1           9.     The method of claim 1, wherein the monitored transmission error rate  
2 comprises a bit error ratio of a number of bits received in error to a total number of bits  
3 received within a predefined time window.

1           10.    The method of claim 1, further comprising:  
2           continuing to monitor the transmission error rate with the link partner after  
3 changing the duplex mode; and  
4           changing the duplex mode from one of the first to second duplex mode or from  
5 the second to first duplex mode in response to detecting that the transmission error rate  
6 exceeds the threshold.

1           11.    A system in communication with a link partner, comprising:  
2           an adapter;  
3           a data link layer in communication with the adapter, wherein the data link layer is  
4 operable to:  
5           (i) establish a connection between the adapter and the link partner at a  
6 common transmission speed;  
7           (ii) set a duplex mode at which the adapter transmits data to a first duplex  
8 mode;  
9           (iii) monitor a transmission error rate with the link partner; and

10 (iv) change the duplex mode to a second duplex mode in response to  
11 detecting that the transmission error rate exceeds a threshold.

1 12. The system of claim 11, wherein the duplex mode is changed without  
2 terminating the connection with the link partner.

1 13. The system of claim 11, wherein the first duplex mode comprises full  
2 duplex and the second duplex mode comprises half duplex.

1 14. The system of claim 11, wherein the first duplex mode comprises half  
2 duplex and the second duplex mode comprises full duplex.

1 15. The system of claim 11, wherein the duplex mode is changed to the  
2 second duplex mode by:  
3 setting a flag in an adapter register to cause the adapter to transmit in the second  
4 duplex mode while maintaining the connection with the link partner.

1 16. The system of claim 11, wherein the first duplex mode comprises full  
2 duplex and the second duplex mode comprises half duplex, and wherein the adapter  
3 switches to the half duplex mode in response to the flag being set by:  
4 detecting a receive signal while transmitting data;  
5 continuing to transmit the data in response to detecting the receive signal and the  
6 flag indicating the full duplex mode; and  
7 terminating the transmission of the data in response to detecting the receive signal  
8 and the flag indicating the half duplex mode.

1 17. The system of claim 11, wherein the adapter is operable to perform:  
2 use auto-negotiation when establishing the connection; and  
3 detect a transmission speed of the link partner after determining that the link  
4 partner does not have auto-negotiation enabled, wherein the common connection speed  
5 comprises the detected transmission speed of the link partner.

1           18.     The system of claim 11, wherein the adapter is further operable to  
2 perform:  
3           force the transmission speed to a predetermined link speed, wherein the  
4 connection is established if the link partner transmits at the predetermined link speed.

1           19.     The system of claim 11, wherein the monitored transmission error rate  
2 comprises a bit error ratio of a number of bits received in error to a total number of bits  
3 received within a predefined time window.

1           20.     The system of claim 11, wherein the data link layer is further operable to  
2 perform:  
3           continue to monitor the transmission error rate with the link partner after changing  
4 the duplex mode; and  
5           change the duplex mode from one of the first to second duplex mode or from the  
6 second to first duplex mode in response to detecting that the transmission error rate  
7 exceeds the threshold.

1           21.     The system of claim 11, further comprising:  
2 a processor; and  
3 a software driver implementing the data link layer executed by the processor.

1           22.     The system of claim 11, wherein the data link layer is implemented in the  
2 adapter.

1           23.     A system in communication with a link partner, comprising:  
2 a processor;  
3 an adapter;  
4 a data link layer execute by the processor in communication with the adapter,  
5 wherein the data link is operable to:  
6           (i) establish a connection between the adapter and the link partner at a  
7 common transmission speed;

- 8 (ii) set a duplex mode at which the adapter transmits to a first duplex  
9 mode;  
10 (iii) monitor a transmission error rate with the link partner; and  
11 (iv) change the duplex mode to a second duplex mode in response to  
12 detecting that the transmission error rate exceeds a threshold.

1 24. The system of claim 23, wherein the duplex mode is changed without  
2 terminating the connection with the link partner.

1 25. An article of manufacture in communication with a link partner, wherein  
2 the article of manufacture is operable to:  
3 establish a connection with the link partner at a common transmission speed;  
4 set a duplex mode to a first duplex mode;  
5 monitor a transmission error rate with the link partner;  
6 change the duplex mode to a second duplex mode in response to detecting that the  
7 transmission error rate exceeds a threshold.

1 26. The article of manufacture of claim 25, wherein the duplex mode is  
2 changed without terminating the connection with the link partner.

1 27. The article of manufacture of claim 25, wherein the first duplex mode  
2 comprises full duplex and the second duplex mode comprises half duplex.

1 28. The article of manufacture of claim 25, wherein the first duplex mode  
2 comprises half duplex and the second duplex mode comprises full duplex.

1 29. The article of manufacture of claim 25, wherein the duplex mode is  
2 changed to the second duplex mode by:  
3 setting a flag in a hardware register to cause the hardware to transmit in the  
4 second duplex mode while maintaining the connection with the link partner.

1           30.    The article of manufacture of claim 29, wherein the first duplex mode  
2 comprises full duplex and the second duplex mode comprises half duplex, and wherein  
3 the hardware switches to the half duplex mode in response to the flag being set by:  
4           detecting a receive signal while transmitting data;  
5           continuing to transmit the data in response to detecting the receive signal and the  
6 flag indicating the full duplex mode; and  
7           terminating the transmission of the data in response to detecting the receive signal  
8 and the flag indicating the half duplex mode.

1           31.    The article of manufacture of claim 25, wherein the article of manufacture  
2 is further operable to:  
3           use auto-negotiation when establishing the connection; and  
4           detect a transmission speed of the link partner after determining that the link  
5 partner does not have auto-negotiation enabled, wherein the common connection speed  
6 comprises the detected transmission speed of the link partner.

1           32.    The article of manufacture of claim 25, wherein the article of manufacture  
2 is further operable to:  
3           force the transmission speed to a predetermined link speed, wherein the  
4 connection is established if the link partner transmits at the predetermined link speed.

1           33.    The article of manufacture of claim 25, wherein the monitored  
2 transmission error rate comprises a bit error ratio of a number of bits received in error to  
3 a total number of bits received within a predefined time window.

1           34.    The article of manufacture of claim 25, wherein the article of manufacture  
2 is further operable to:  
3           continue to monitor the transmission error rate with the link partner after changing  
4 the duplex mode; and

5           change the duplex mode from one of the first to second duplex mode or from the  
6 second to first duplex mode in response to detecting that the transmission error rate  
7 exceeds the threshold.